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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/523,771

03/24/2006

Martyn Vincent Twigg

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EXAMINER

TRAN, BINH Q

ART UNIT

PAPER NUMBER

3748

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/523,771

Applicant(s)

TWIGG, MARTYN VINCENT

Examiner

BINH Q. TRAN

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This office action is in response to the amendment filed January 19, 2007.

Claim Objections

Claims 4 and 19 are objected to because of the following informalities:

-In claims 4 and 19, line 2, "*between the or each pair*" should be changed to --- between each pair ---. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

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Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-10, and 13-20 are rejected under 35 U.S.C. 102 (e) as being anticipated by Kiyohide (Patent Number 5,665,322).

Regarding claims 1, and 17-18, Kiyohide discloses an exhaust system (Abstract) for a lean-burn internal combustion engine comprising a soot filter packed with a mass of elongate, flat, narrow strip metal wherein the mass is compressed to provide a first packing density (**High Density**) (e.g. See col. 3, lines 50-67; col. 4, lines 1-42), and a catalyst located upstream of the filter for oxidising NO to NO₂ for combusting soot collected on the filter in NO₂, wherein the catalyst is supported on a metal substrate of the type used in the filter having a second packing density (**Low Density**) lower than the first packing density, to permit passage of soot particles (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 2, Kiyohide further discloses a plurality of metal-based filters adapted successively to trap smaller and smaller particles (e.g. See col. 3, lines 50-67; col. 4, lines 1-42)

Regarding claim 3, Kiyohide further discloses at least one wall flow filter for trapping yet smaller particles (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 4, Kiyohide further discloses a flow-through monolith between theor each pair of metal-based filters (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 5, Kiyohide further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO₂ content, which had been decreased by reaction with soot in the preceding filter (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 6, Kiyohide further discloses that the filter capacity is sufficient to allow the soot to be combusted continuously by the oxidant (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 7, Kiyohide further discloses that the filter capacity is sized for accumulations of soot sufficient to increase pressure-drop significantly before the next period of fast running and the system includes a bypass, wherein the pressure-drop through which is equal to the design maximum tolerated pressure-drop through the filter, whereby to avoid engine stalling (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 8, Kiyohide further discloses means to limit soot emission to atmosphere located downstream of the bypass, which means being selected from the group consisting of a filter, an impingement collector and an oxidation catalyst (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 9, Kiyohide further discloses that the filter comprises a regular coiled, woven or knitted structure (e.g. See col. 3, lines 50-67; col. 4, lines 1-42).

Regarding claim 10, Kiyohide further discloses that the metal of the filter is Type 300 or Type 400 stainless steel (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 13, Kiyohide further discloses that the wherein the flat, narrow strip metal is a flattened wire (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

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Regarding claim 14, Kiyohide further discloses that the filter packing carries a layer catalytic for soot oxidation (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 15, Kiyohide further discloses that the catalytic layer comprising a washcoat and a component selected from the group consisting of Pt and oxides of Cs and V (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 16, Kiyohide further discloses that the means for generating a component for combusting soot collected on the filter selected from the group consisting of ozone and plasma (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 19, Kiyohide further discloses a flow through-monolith between the or each pair of metal-based filters (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Regarding claim 20, Kiyohide further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO₂ content, which had been decreased by reaction with soot in the preceding filter (e.g. See Claims 3-8; col. 15, lines 1-67; col. 16-17, lines 1-67; col. 18, lines 1-60).

Claims 1-10, and 13-20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Manson et al. (Manson) (Patent Number 6,248,689).

Regarding claims 1, and 17-18, Manson discloses an exhaust system (e.g. Fig. 3-4) for a lean-burn internal combustion engine comprising a soot filter (e.g. 152, 174) packed with a mass

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of elongate, flat, narrow strip metal wherein the mass is compressed to provide a first packing density, and a catalyst (e.g. 150, 170) located upstream of the filter (e.g. 152, 174) for oxidising NO to NO₂ for combusting soot collected on the filter in NO₂, wherein the catalyst is supported on a metal substrate of the type used in the filter having a second packing density lower than the first packing density, to permit passage of soot particles (e.g. See Figs. 3-4; col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 2, Manson further discloses a plurality of metal-based filters (e.g. 10) adapted successively to trap smaller and smaller particles (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 3, Manson further discloses at least one wall flow filter for trapping yet smaller particles (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 4, Manson further discloses a flow-through monolith between each pair of metal-based filters (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 5, Manson further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO₂ content, which had been decreased by reaction with soot in the preceding filter (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 6, Manson further discloses that the filter capacity is sufficient to allow the soot to be combusted continuously by the oxidant (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 7, Manson further discloses that the filter capacity is sized for accumulations of soot sufficient to increase pressure-drop significantly before the next period of

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fast running and the system includes a bypass, wherein the pressure-drop through which is equal to the design maximum tolerated pressure-drop through the filter, whereby to avoid engine stalling (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 8, Manson further discloses means to limit soot emission to atmosphere located downstream of the bypass, which means being selected from the group consisting of a filter, an impingement collector and an oxidation catalyst (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 9, Manson further discloses that the filter comprises a regular coiled, woven or knitted structure (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 10, Manson further discloses that the metal of the filter is Type 300 or Type 400 stainless steel (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 13, Manson further discloses that the wherein the flat, narrow strip metal is a flattened wire (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 14, Manson further discloses that the filter packing carries a layer catalytic for soot oxidation (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 15, Manson further discloses that the catalytic layer comprising a washcoat and a component selected from the group consisting of Pt and oxides of Cs and V (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 16, Manson further discloses that the means for generating a component for combusting soot collected on the filter selected from the group consisting of ozone and plasma (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

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Regarding claim 19, Manson further discloses a flow through-monolith between the or each pair of metal-based filters (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Regarding claim 20, Manson further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO₂ content, which had been decreased by reaction with soot in the preceding filter (e.g. See col. 6, lines 50-67; col. 7, lines 1-63).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiyohide in view of design choice.

Regarding claims 11-12, and 21, Kiyohide discloses all the claimed limitation as discussed above except that the iron alloy containing at least 11.5% Cr, 4% Al and 0.02-0.25%, and the width of the metal strip of the filter is up to 2 mm and its thickness is 0.2 to 0.8 times its width.

Regarding the specific range of the compositions of the iron alloy, and the width and thickness of the metal strip, it is the examiner's position that a range of at least 11.5% Cr, 4% Al and 0.02-0.25% the compositions of the iron alloy, and up to 2 mm and its thickness is 0.2 to 0.8 times its width of the filter metal strip, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust

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gas, as well as the size of the engine, properties of materials for making the NOx catalyst and soot filter, and the controlled temperature of the catalytic converter and soot filter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Normann et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmischer*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

Response to Arguments

Applicant's arguments filed January 19, 2007 have been fully considered but they are not completely persuasive. Claims 1-21 are pending.

Applicant's cooperation in explaining the claims subject matter more specific to overcome the claim rejection is appreciated.

Applicants' s arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Applicant's amendment (Claims 1-21) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL See MPEP, 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

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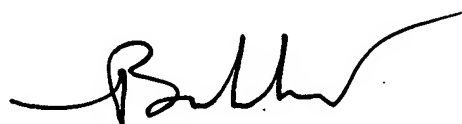
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
April 14, 2007



Binh Q. Tran
Patent Examiner
Art Unit 3748